



STRUCTURAL CHALLENGE



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LEARNING OUTCOMES

- Force and Tension Research
- Technical Design Process
- Geometric Principles
- Architectural Design Process
- Structural Engineering and Construction
- Material Science
- Budget Management
- Effective Storytelling
- Theater Arts Skills
- Critical Thinking
- Team Collaboration
- Interpersonal Communication
- Presentation Skills
- Time Management
- Perseverance
- Risk Taking
- Stages of the Creative Process
- Self-directed Learning

POINTS OF INTEREST

- Build a structure that will be tested against two forces at the same time.
- Design a prop that will be assembled during your presentation. The prop's parts must fit completely inside a measured space.
- Create a story in which tension is a threat to stability and is overcome in some way.
- Create and present two Team Choice Elements that show off the team's interests, skills, areas of strength, and talents.

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Time Limit

The team must complete the Presentation (including setting up) in **8 minutes or less**.

Team Budget:

The total value of the materials used may not exceed **\$125US**.

Approaching this Challenge

This Challenge can be solved on many levels, ranging from the simple to the complex. We recognize that there are many different ways to be creative. Please approach this Challenge in the true spirit of Destination Imagination: try foremost to solve the Challenge. If you find the intent or any of the details of the Challenge unclear, we encourage you to ask for a Clarification. (See the Rules of the Road.) Remember—if it doesn't say you can't, then you can. However, if it says you "must" perform specific requirements, then those requirements have to be met.

Team Number

Teams and individuals using these Program Materials must hold a 2013-2014 Team Number. The Destination Imagination Team Number is a license to compete in sanctioned tournaments and/or to use the Program Materials for educational purposes within your team, school, group, or organization. Online access to Program Materials for teams who have purchased Team Numbers is on www.DestinationImagination.org.

- ☐ My 2013-14 Team Number is:
 _ _ _ _ - _ _ _ _ _
- ☐ My team is planning to compete in a sanctioned tournament.
- ☐ I have registered for that tournament with the:
☐ Regional Director or ☐ Affiliate Director

TEAMS

In order to successfully solve this Challenge, teams must read and follow:

- ☐ Team Challenge
- A. The Central Challenge (240 points)
 - B. Team Choice Elements (60 points)
 - C. Reward Points
 - D. At the Tournament
- ☐ Rules of the Road
- ☐ Published Clarifications
 (online at DestinationImagination.org)

The information in these materials is binding for all teams.

TEAM MANAGERS

Recommended Resources:

- ☐ Roadmap
- ☐ Instant Challenge Practice Set
 (available online in the Resource Area at DestinationImagination.org)
- ☐ Travel Guide for Teams
 (available online after Jan. 1, 2014)
- ☐ facebook.com/destinationimagination
- ☐ twitter.com/idodi
- ☐ Training at Dluniversity.org

1. **Intent of the Challenge:** To solve this Challenge, the team must build a Structure made entirely from Wood, Glue, and/or Monofilament Fishing Line. The team must test the Structure's strength under stress from two forces. The team must create and present a Story in which tension is a threat to stability and this tension is overcome in some way. Additionally, the team must design a prop that will be assembled on-site at the tournament during its Presentation from materials transported in a team-provided container that fits entirely within a 25in x 25in x 37in (63.5cm x 63.5cm x 94cm) space.
2. **Designing and Building the Structure:**
 - a. The team must design and build a Structure made entirely from Wood, Glue, and/or Monofilament Fishing Line. The Structure will be tested on-site at the tournament during the team's Presentation. Teams are encouraged to build and test many structures before competing at the tournament.
 - b. The team must design the Structure so that it can be placed on the tournament-provided Structure Tester at the tournament for testing. The team will test how much weight the Structure can hold by stacking a Pressure Board and weights on it. Section D.4.a shows a diagram of a Structure Tester. For the purpose of this Challenge, a modification has been made to the standard tester base which includes a four-sided pyramid (see figures in D.4 and Table 1 for dimensions). This Pyramid Tester Base is used to apply tension to the Structure.
 - c. Team members must do all tooling and/or shaping of the Structure. **The team must not use any type of technology** that designs, creates, or aids in the testing of the Structure based on input of the Challenge specifications. Some examples of this technology are Computer Aided Design (CAD) or Structural Analysis Systems.
 - d. A jig is a template or guide the team uses to help in building the Structure. If a jig is used in the construction of the Structure, the jig must be team-created and built.
3. **Structure Specifications:**
 - a. **Materials:** The Structure must be made entirely from Wood, Glue, and/or Monofilament Fishing Line in any combination.
 - i. Any type of natural **Wood** (see definition) is allowed.
 - ii. Any commercially available **Glue** (see definition) is allowed.
 - iii. Any **Monofilament Fishing Line** (see definition) is allowed.
 - iv. More than one type of Glue, and/or Monofilament Fishing Line, and/or more than one species of Wood may be used.
 - v. Markings made with pencil, ink, pen and markers, in any color, may be applied to the Structure. The Structure may not be painted or have any other coatings applied. Glue should only be used to bind the Structure components. Glue may not be used as a coating.
 - vi. Appraisers will inspect the materials used in the Structure during Structure Check-In (see D.2). If necessary, the Appraisers will examine the materials again after the team tests the Structure.

Safety Note: Teams must read and follow all instructions and precautions on the labels of any Glues they use. If teams use Epoxy glue or “super glues,” they must use them in ventilated areas, with a de-bonder close at hand. Team members must be careful not to touch their eyes or anything else if Glue gets on their hands. Teams should have adult supervision while using Glue.

Wood

A natural substance found under the bark of any type of tree. The Wood used in the Structure must be 100% natural. The following are NOT acceptable: Cork, man-made substances that simulate natural wood (e.g., plywood, commercially available laminates, or fiberboard), or are made from Wood and any other material (e.g., paper, cardboard); and tree-like substances (e.g., bamboo, grasses).

Glue

Any commercially available adhesive material applied in liquid form capable of creating a permanent bond (e.g., two-part epoxy, Gorilla Glue, super Glues, wood glues, hot glue, and glues that use an accelerant).

Monofilament Fishing Line

Any commercially available single-strand non-metallic fishing line, of any weight or diameter.

b. Weight of the Structure:

- i. The total weight of the Structure for Elementary Level teams must not exceed 120 grams.
 - ii. The total weight of the Structure for Middle Level teams must not exceed 80 grams.
 - iii. The total weight of the Structure for Secondary Level teams must not exceed 40 grams.
 - iv. The total weight of the Structure for University Level teams must not exceed 20 grams.
- c. **Height of the Structure:** The Structure, **when placed upon the Pyramid Tester Base (PTB)**, must be at least 7.5in (19.1cm) and no more than 9in (22.9cm) tall (including any height added by the PTB), **as measured from the top (flat) surface of the Structure Tester base.**
- d. The Structure must be a single unit. Multiple free-standing pieces placed on the Structure Tester will not meet the Challenge requirements.
- e. The Structure must fit on the Structure Tester. (see D.4) An opening that can easily accept a circular column with an outside diameter of 2in (5.1cm) must run the entire vertical height of the Structure. This is so the Structure will fit easily around the Safety Pole on the Structure Tester, but not through the 2in (5.1cm) hole in the Pressure Board.
- f. The Structure may only touch the Structure Tester on the top surface (angled sides) of the Pyramid Tester Base, the bottom surface of the Pressure Board, and the Safety Pole.

4. **Weight Held Measurement Procedure:**

- a. After Presentation time begins, the team will place the Structure over the Safety Pole so that the Structure rests only on the Pyramid Tester Base. The Structure may touch the Safety Pole.
- b. The team may start weight placement at any time after the Presentation time begins. (See D.4. for weight placement details.)
- c. After Presentation time ends, the Weight Placement Appraiser will verify the weight held by the Structure. This is called the Official Weight Held, which includes the weights and the Pressure Board. Only the weights that are physically on the Pressure Board when weight placement ends, and have been there for 3 seconds or more, are counted in the Official Weight Held.
- d. The Weight Held Ratio (WHR) is the Official Weight Held in pounds divided by the Structure's weight in grams (measured to the nearest tenth of a gram), rounded to two decimal places.
- e. Weight Held Ratio = Official Weight Held in pounds ÷ the Structure's weight in grams

Example: If the Official Weight Held is 195 pounds and the Structure's weight is 52.3 grams, the Weight Held Ratio is 3.73 ($\text{WHR} = 195 \div 52.3 = 3.73$).

5. **Structure Scoring:** It is the intent of the Challenge that the team will create a Structure according to the specifications in A.2 and A.3, and that the team will test the Structure at the tournament during its tournament Presentation time.

- a. If the Structure does not meet the specifications in A.2 and A.3, and if the team is unable to bring the Structure into compliance with these specifications, the Official Weight Held will be zero. However, the team may present its solution and earn points for other Challenge requirements.
- b. Any team that does not make a "good faith" attempt to present a Structure for testing may earn points for other Challenge requirements, but may not advance to the next level of tournament competition. The Appraisers will make this determination, and their decision is final.
- c. The team will earn points for the Structure based on the Weight Held Ratio (C.1).

6. **The Story**

- a. The team will create and present a Story where tension of any sort is a threat to stability and how that tension is overcome. Examples of tension are dramatic, muscular, mechanical, artistic, emotional, etc.
 - i. The Story can be set in any location, real or imaginary, and in any time period. There are no restrictions on character(s). They may be historic or original; human or non-human; real or imaginary.
 - ii. The team should integrate the Structure testing into their Story.
- b. The team will earn points for:
 - i. Creative depiction of tension as a threat to stability (C.3.a).
 - ii. Creative depiction of how tension is overcome in the Story (C.3.b).
 - iii. Creative integration of Structure testing into the Story (C.3.c).

7. The Site-Assembled Prop

- a. The team will design a Prop (see definition) to be assembled on-site during its Presentation, using parts which must initially fit into a team-provided container.
 - i. This container may be team built or be a commercially available container (for example, cardboard box, crate, plastic crate). Note that commercially available containers are typically sized by **inside dimensions**.
 - ii. This container must have **outside dimensions** that fit entirely within a 25in x 25in x 37in (63.5cm x 63.5cm x 94cm) measured space. The entire container, including any external features on the container added to help in transport, such as casters, handles, etc., must fit in the measured space. These dimensions will be verified by the Prep Area Appraiser before the Presentation. The team will earn 10 points for meeting this requirement (C.2).
 - iii. The parts that make up the Prop must be removed from the container and assembled during the 8-minute Presentation time. The container may not be used as part of the Site-Assembled Prop or any part of the Presentation and cannot receive score. The cost of the container should be listed as exempt on the Expense Report. There are no other restrictions on the container.
- b. The team will earn points for:
 - i. Integration of the Site-Assembled Prop into the Story (C.4.a).
 - ii. Creativity of the assembly process of the Site-Assembled Prop. This includes theatrical, engineering or other creative assembly processes (C.4.b).
 - iii. Technical Design and Engineering Innovation (see definitions) of the Site-Assembled Prop (C.4.c).

Prop

A portable object other than a costume or scenery, which is used to enhance the performance of the Story.

Technical Design

The result of a plan for carrying out or accomplishing a task. A well-designed technical design shows careful planning, and it performs its task using effective, efficient and reliable technical methods.

Engineering Innovation

A new, unique or creative way to solve a problem, accomplish a task, or combine objects and elements.

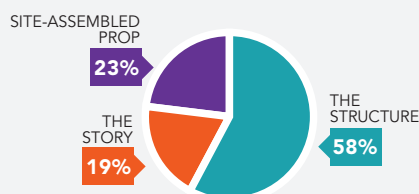
8. **Team Identification Sign:** The team should provide a free-standing Identification Sign of approximately 2ft. x 3ft. (0.6m x 0.9m) displaying your team's Team Name, Team Number, School/Organization (if different from Team Name), and Level. The team cannot use the sign as a scoring element. See "Team Identification Sign" section in Rules of the Road for further information.

In addition to the above requirements, the team must present TWO creations called “Team Choice Elements” that show off their interests, skills, areas of strength, and talents. The team may create anything they wish for Team Choice Elements including props, music, technical gadgets, costumes, physical actions, etc.

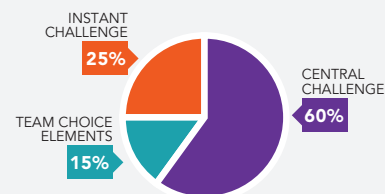
1. The team must present both Team Choice Elements as part of the 8-minute Presentation and each Team Choice Element should have a meaningful connection to the team’s Central Challenge solution. Each Team Choice Element must be described briefly on the Tournament Data Form found at the end of this Challenge.
2. A Team Choice Element may not be a specific item that is required in the Central Challenge and is already being evaluated. A Team Choice Element MAY be a single unique PART of a required item, as long as it can be evaluated as a stand-alone item. Both Team Choice Elements may be presented at the same time ONLY IF both can be easily identified and scored separately. Examples of these can be found in Rules of the Road.
3. Each Team Choice Element will be evaluated in three ways: for the creativity and originality of the Team Choice Element, for the quality, workmanship, or effort that is evident, and for the integration into the Presentation. Evaluation of Team Choice Elements is subjective.

ELEMENT	POINTS	DETAIL
Central Challenge	Up to 240	A
1. The Structure's Weight Held Ratio	Up to 140	A.4.e
<ul style="list-style-type: none"> In each competitive Level, the Structure with the highest Weight Held Ratio will receive 140 points. The score for all other teams in that Level will be based on the percentage of its Structure's WHR compared to the highest WHR in that level. <p>Team's score = (WHR ÷ highest WHR in Level) × 140</p> <ul style="list-style-type: none"> This score added to the scores the team earns for the items listed below will equal the total Raw Score. 		
2. Prop container and contents fit completely inside a 25in x 25in x 37in (63.5cm x 63.5cm x 94cm) measured space	0 or 10	A.7.a.ii
3. Story	Up to 45	
a. Creative depiction of tension as a threat to stability	Up to 15	A.6.b.i
b. Creative depiction of how tension is overcome	Up to 15	A.6.b.ii
c. Creative integration of Structure testing into the Story	Up to 15	A.6.b.iii
4. Site-Assembled Prop	Up to 45	
a. Integration of the Site-Assembled Prop into the Story	Up to 15	A.7.b.i
b. Creativity of assembly process of the Site-Assembled Prop	Up to 15	A.7.b.ii
c. Technical Design & Engineering Innovation of the Site-Assembled Prop	Up to 15	A.7.b.iii
Team Choice Elements	Up to 60	B
1. Team Choice Element 1	Up to 30	
a. Creativity and originality	Up to 10	B.3
b. Quality, workmanship, or effort that is evident	Up to 10	B.3
c. Integration into the Presentation	Up to 10	B.3
2. Team Choice Element 2	Up to 30	
a. Creativity and originality	Up to 10	B.3
b. Quality, workmanship, or effort that is evident	Up to 10	B.3
c. Integration into the Presentation	Up to 10	B.3

CENTRAL CHALLENGE SCORING



PUTTING IT ALL TOGETHER



At the Tournament: Special Procedures for the Structure Challenge

1. The Presentation Site:

- a. The minimum dimensions of the Presentation Site will be 16ft x 16ft (4.9m x 4.9m). In most cases, this area will not be marked on the floor. When possible, the tournament may provide a larger Presentation Site. The team may use all of the Presentation space available at its site, but it must be prepared to present in the minimum area specified. The team should keep in mind that the weights and Structure Tester will occupy a portion of the Presentation Site.
- b. The team must not move the Structure Tester from its location or alter it in any way.
- c. A single 3-prong AC electrical outlet will be provided at least to the edge of the Presentation Site.

2. The Structure Check-In Procedure: Prior to the team's Presentation time, at a time designated by the Tournament Director, the team will bring its Structure and a completed copy of Page 2 of the Tournament Data Form to the Structure Check-In Area. The purpose of Structure Check-In is to determine whether the Structure meets the Challenge specifications. The Structure Check-In Area may be at a separate location from the Presentation Site.

- a. The Structure Check-In Appraisers will always avoid touching the Structure.
- b. The Structure Check-In Appraisers will instruct the team to place its Structure on the scale. Once the scale reading stabilizes, the Structure Check-In Appraisers will verify that it does not exceed the weight limit for their competition Level. They will record the official Structure weight to the nearest tenth of a gram on the Structure Check-In Form.
- c. Next, the Structure Check-In Appraisers will make sure that the team can legitimately test the Structure using a representation of the Tester Base, including the Pyramid Tester Base. **A team member must place the Structure on the representation of the Tester Base so that a 2in (5cm) outside diameter cylinder easily passes through the Structure vertically. The Structure must be able to stand on the representation of the Tester Base without team members holding it.** The Appraisers will validate that the Structure does not touch the Safety Supports, Safety Shields, or anywhere other than the top surface of the Pyramid Tester Base.
- d. While the Structure rests on the representation of the Pyramid Tester Base, the Appraisers will measure it. They will verify that the Structure is at least 7.5in (19 cm) and not more than 9in (23 cm) tall, including the height added by the PTB, as measured from the top (flat) surface of the Tester Base.
- e. The Check-In Appraisers will make sure that teams have constructed their Structure using only Wood, Glue, and/or Monofilament Fishing Line. They may recall the Structure to the Check-In Area after the team's Presentation to verify the team used only those materials that meet the Challenge requirements. If the Check-In Appraisers want the Structure returned following the Presentation, they will note it on the Structure Check-In Form.
- f. The Structure Check-In Appraisers will make every effort, within reasonable scheduling constraints, to allow the team the time to bring their Structure into compliance with the above specifications. Any team whose Structure does not meet the above specifications will receive an Official Weight

Held of zero. However, the team may still present its solution and earn points for other Challenge requirements.

- g. When Structure Check-In is complete, the team will place its Structure into a team-provided storage container and the Structure Check-In Appraisers will seal the container. The Structure and the Structure Check-In Form must remain in a designated place in the Structure Check-In Area until approximately 20 minutes before the team's scheduled Presentation time.
 - h. Approximately 20 minutes before the team's scheduled Presentation time, one or more team members must return to the Structure Check-In Area to collect the Structure and carry it to the Prep Area at the Presentation Site. Team members must not break the seal on the storage container until the Prep Area Appraiser directs the team to do so.
 - i. If a team arrives in the Prep Area with a Structure storage container with a broken seal, the team will be required to return to Check-in to have the Structure re-checked.
3. **Placement of the Structure on the Structure Tester:** During the Presentation, the team will demonstrate the Structure's ability to support weight using the Structure Tester and weights that the Tournament Director provides.
 - a. After the Presentation time begins, the team will place the Structure around the Safety Pole and on the Pyramid Tester Base. The team may adjust its Structure on the Tester Base as needed to place the Structure to its satisfaction before beginning weight placement.
 - b. The team members may remove the Safety Shields as they place their Structure on the Structure Tester. They must put them back after the Pressure Board is placed, and before they begin weight placement.
 - c. The Structure Tester will sit within the Presentation Area. The team must not move the Structure Tester from its location, or alter it in any way. The team must not use the weights or the Structure Tester for any purpose other than testing the Structure during the Presentation.
 4. **Weight Placement Specifics:**
 - a. **Structure Tester and Weights:** The tournament will provide a Structure Tester shown below in Figures A, B, and C and with the dimensions listed in **Table One**. All weights will be Olympic style plates with a 2in (5 cm) hole in the center. The range of weights available may vary from tournament to tournament. The team may check with their Tournament Director for specific weights available. The Pressure Board counts as the first weight. Figures below not to scale.

Figure A: Top View

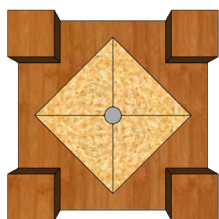


Figure B: Side View

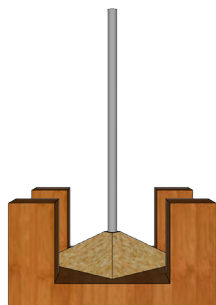


Figure C: Isometric View

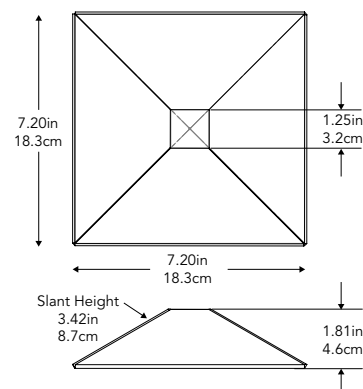
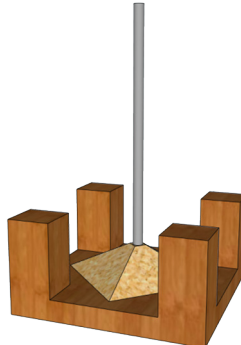


Table One: Dimensions of Tester

All Structure Testers should meet these specifications

Tester Component	Inches	Centimeters	Notes
Tester Base	18in x 18in	45.7cm x 45.7cm	The thickness may vary at different tournaments. Typically 3in – 4in (7.6cm – 10.2cm) thick.
Pressure Board	18in x 18in	45.7cm x 45.7cm	The thickness may vary at different tournaments. Typically 1.5in (3.8cm) thick.
Pressure Board hole	2in	5.1cm	
Safety Support height	7in	17.8cm	Measured from the top surface of the Tester Base to the top of the Support.
Safety Support width	3.25in-4in	8.3cm-10.2cm	
Safety Pole height	24in	61cm	Measured from the top surface of the Tester Base to the top of the pole.
Safety Pole diameter	1in	2.5cm	The Representation of the Tester Base used in Structure Check-In will use a 2in. (5.1cm) cylinder.
Pyramid Base Width	7.2in x 7.2in	18.3cm x 18.3cm	
Pyramid Base Height	1.81in	4.6cm	
Pyramid Slant Height	3.42in	8.7cm	
Pyramid Top Face	1.25in x 1.25in	3.2cm x 3.2cm	

NOTE: The Pyramid Tester Base is a removable modification to the Structure Tester. The team may purchase a pre-made metal Pyramid Tester Base on www.ShopDI.org. The team may find instructions on how to build both the Structure Tester and the Pyramid Tester Base at www.DestinationImagination.org.

- b. During the weight placement, team members must:
 - i. Use the Structure Tester and weights the Tournament Director provides.
 - ii. Determine the order in which they will place weights on the Structure Tester.
 - iii. Select the weights they will place on the Structure Tester.
 - iv. Place weights over the Safety Pole one at a time onto the Structure Tester.
- c. The Pressure Board must be the first weight the team places upon the Structure. **The Pressure Board will be clearly marked with its official weight, rounded to the nearest pound.** One or more team members may touch the Structure while they place the Pressure Board upon the Structure. Note: If the team wishes to know the specifics of the Structure Tester for their tournament (e.g., the height of the Tester Base, the thickness of the Pressure Board, and/or the actual weight of the Pressure Board), they may check with their Tournament Director.
- d. Team members must not touch the Structure or the Structure Tester after placing the Pressure Board unless they first remove all weights (including the Pressure Board). If the team wants to make any adjustment to the Structure's placement during the Presentation, the team must first remove all weights (including the Pressure Board). Presentation time will not stop.

Safety Notes:

- **When team members and/or any Adult Assistants are placing weights, they must wear protective eyewear for safety. The team must provide its own protective eyewear.** Because it is used only for safety, protective eyewear is exempt from cost on the Expense Report form.
 - Under no circumstances may a team member touch or come into contact with a weight stack that is rotating or moving.
 - Team members and any Adult Assistants who are placing weights must wear closed-toe shoes.
 - When placing a weight, team members should keep their fingers on the sides of the weight so they do not pinch their fingers.
 - When moving weights, teams should check that there is a clear path to the Structure Tester.
- e. The Structure must support a weight for a minimum of **3 seconds**, as counted by an Appraiser, for that weight to be included in the Structure's Official Weight Held. The 3-second count for a weight that has been placed begins when no hands are touching any weight on the weight stack. The team does not need to wait 3 seconds before adding additional weights. The Appraiser's count is final.
- f. **Safety Pole Extension Pipes:**
- i. At Regional Level tournaments, the team may use **no** extension pipes.
 - ii. At Affiliate Level tournaments, the team may use **one 12in (30.5cm)** extension pipe.
 - iii. At the Global Finals tournament, the team may use **two 12in. (30.5cm)** extension pipes.
 - iv. At no time may step stools, ramps or similar devices be used in weight placement.
 - v. For safety, teams must add the extension pipe, if allowed as stated above, to the top of the Safety Pole once the weight stack reaches the 1-inch (2.5cm) mark on the original Safety Pole or the extension pipe.
- g. **Adult Assistant: Only Elementary Level and Middle Level** teams may elect to use an Adult Assistant to help place or remove weights of **25lbs (11.3kg) or more**. Team members must direct the placement or removal and support the weight to the best of their ability if they use an Adult Assistant. The Adult Assistant:
- i. May assist in the placement or removal of weights weighing 25lbs (11.3kg) or more. For the purpose of this Challenge, assist means that the adult may help a team member lift, move, and set a weight that he/she might not otherwise be able to handle alone.
 - ii. Must wait in an area the Appraisers designate until a team member directs him or her to move towards the weights. The team member will direct the Adult Assistant to the specific weight for which he or she wants assistance.
 - iii. Must return to the designated waiting area at any time that a team member is not actively directing him or her to assist with placement or removal of a weight.

- iv. Must only respond to directions from team members or Appraisers.
 - v. Must not direct weight placement or removal in any way. If, in the opinion of the Appraisers, the Adult Assistant is directing **ANY** aspect of weight selection or placement or removal, the Appraisers will halt weight placement or removal, warn the Adult Assistant of the inappropriate action and remind him/her of the team's responsibility. The Appraiser will instruct the team to remove any weight(s) that they placed with excess adult assistance or direction. Weight placement or removal will then resume. Presentation time will not stop.
 - vi. If the Adult Assistant engages in any further inappropriate activity, the Appraisers will direct him/her to withdraw from the Presentation Site. Team members must then place or remove any additional weights **without** the aid of an Adult Assistant.
 - vii. Weights placed with inappropriate adult assistance or direction will not count toward the calculation of the Official Weight Held. The Appraisers' decision is final.
- h. **The weight placement portion for the testing of the Structure will end when any of the following occur:**
- i. The team elects to stop weight placement. The team may do this at any time during the 8-minute Presentation. If the team indicates that testing is completed before the end of the 8-minute time limit, the weights must remain on the Structure Tester until counted by an Appraiser.
 - ii. The Pressure Board or the Structure touches any of the four Safety Supports or any of the Safety Shields of the Structure Tester. A weight that causes the Pressure Board or the Structure to touch the Safety Supports prior to the completion of the 3-second count will not count towards the Official Weight Held total. If the Weight Placement Appraiser cannot slide a single sheet of paper between the Pressure Board and the Safety Support, this means that the Pressure Board is touching the Safety Supports.
 - iii. The placed weights reach the mark that is 1in (2.5cm) below the top of the Safety Pole or the extension pipes, when used. The team must not place any further weights on the stack once the weights reach the 1in (2.5cm) mark below the top of the original safety pole or the topmost extension pipe, when used. The mark does not have to be visible at that point, but the team must not add any more weights once the weight stack is at or above the mark.
 - iv. Any part of the Structure touches anything other than the Pyramid Base of the Tester, the Pressure Board, or the Safety Pole. This means that if any part of the Structure touches the original flat base of the tester, weight placement will end. Pieces of the Structure that incidentally fall off and touch the base or sides of the Structure Tester will not cause weight placement to end.
 - v. The 8-minute time limit ends.

Note: Teams may use the entire 8-minute Presentation time for weight placement, regardless of whether or not they have ended the performance of their Story. They may use the entire 8-minute Presentation time for their performance, regardless of whether or not their Structure has failed.

TOURNAMENT DATA FORM

STRUCTURAL CHALLENGE: THE TENSION BUILDS / PAGE 1 OF 3

Team Name: _____ Team Number: ____ - ____

School/Organization: _____ Level: EL ML SL UL

To the teams and Team Managers: Help the Appraisers identify the required elements of your Challenge solution so they can award all of the points your team has earned. Please fill this 3-page form out completely and neatly.

For Elementary Level teams only:

Team Managers MAY write the words dictated by the team in the appropriate spaces of the form.

PART ONE: Required Paperwork and Materials

Required Paperwork: At the tournament Presentation site, the Prep Area Appraiser will ask for your team's forms. A complete checklist of the required forms is below. None of the forms listed below can be used as a scoring item.

Your team needs:

- ☐ **Five copies** of the completed PAGE ONE and PAGE TWO of the Tournament Data Form. This is PAGE ONE of the form.
- ☐ **One Copy** of the completed PAGE THREE of the Tournament Data Form. This page helps your team reflect on how you experienced the creative process.
- ☐ **Two Copies** of the completed Declaration of Independence. Blank copies of this form can be found in the Rules of the Road. One copy of this form is for Team Challenge, the other copy of is for you to take to Instant Challenge.
- ☐ **One Copy** of the completed Expense Report. This form can be found in the Rules of the Road. Be sure to bring copies of your receipts in case you are asked for them, but it is not necessary to attach them to the form.
- ☐ **One Copy** of Team Clarifications issued to your team.
- ☐ **Team Identification Sign:** This will tell the Appraisers and the audience who you are. It must list your Team Name, Team Number, School/Organization (if different from Team Name), and Level. It cannot be scored. See the Rules of the Road for more information.
- ☐ **Published Clarifications:** We have read and are aware of the Published Clarifications for this Challenge available on www.DestinationImagination.org.

PART TWO: Brief Description of Team Choice Elements

Team Choice Element 1: What is your Team Choice Element?

Please write a brief description of your Team Choice Element. Make sure that Appraisers know exactly what you want them to evaluate. What would you like them to know about the Team Choice Element?

Team Choice Element 2: What is your Team Choice Element?

Please write a brief description of your Team Choice Element. Make sure that Appraisers know **exactly** what you want them to evaluate. What would you like them to know about the Team Choice Element?

TOURNAMENT DATA FORM

STRUCTURAL CHALLENGE: THE TENSION BUILDS / PAGE 2 OF 3

Team Name: _____ Team Number: ____ _ - ____ _

School/Organization: _____ Level: EL ML SL UL

PART THREE

This Challenge requires the team to supply the following information to help the Appraisers evaluate your solution. This is PAGE TWO of the form. Be sure to fill in all pages.

Structure Specifications: Check to make sure your Structure meets these specifications (see Part A).

- ☐ The Structure is constructed only of Natural Wood, Glue, and/or Monofilament Fishing Line (A.3.a).
- ☐ The weight of the Structure does not exceed 120 grams (EL), 80 grams (ML), 40 grams (SL), 20 grams (UL) (A.3.b).
- ☐ The Structure is at least 7.5in (19.1cm) and no more than 9in (22.9cm) tall (including any height added by the PTB), as measured from the top (flat) surface of the Structure Tester base. (A.3.c)
- ☐ The Structure is a single unit (A.3.d).
- ☐ The Structure has an opening running its entire height which can accept a circular column with an outside diameter of 2in (5.1cm) (A.3.e).
- ☐ The Structure can rest upon the Pyramid Tester Base and fit around the Safety Pole (A.3.f).

1. The Story about tension.

- a. Describe the tension in your Story. (A.6.a)

- b. How does tension threaten stability in your Story and how is the tension overcome? (A.6.a)

- c. How is Structure testing integrated into the performance of your Story? (A.6.a.ii)

2. The Site-Assembled Prop

- a. Describe your Site-Assembled Prop. (A.7)

- b. Do the parts of your Site-Assembled Prop fit entirely within a 25in x 25in x 37in (63.5cm x 63.5cm x 94cm) measured space? (A.7.a.ii) Yes____ or No____
- c. How is your Site-Assembled Prop assembled in your Story? (A.7.b.ii)

- d. Describe the Technical Design and Engineering Innovation of your Site-Assembled Prop. (A.7.b.iii)

TOURNAMENT DATA FORM

STRUCTURAL CHALLENGE: THE TENSION BUILDS / PAGE 3 OF 3

Team Name: _____ Team Number: ____ _ - ____ _

School/Organization: _____ Level: EL ML SL UL

PART FOUR

THE CREATIVE PROCESS: Reflect on how your team experienced each stage of the creative process as you solved the Team Challenge:

1. **RECOGNIZE:** Understanding all the issues or points of the Challenge:
2. **IMAGINE:** Using your imagination to explore new ideas about possible solutions to the Challenge:
3. **INITIATE:** Taking risks and going beyond the minimum as you commit to a solution:
4. **COLLABORATE:** Understanding and using different problem-solving styles. Listening to all team ideas before judging them:
5. **ASSESS:** Assessing the solution as it is being created and after it is finished:
6. **EVALUATE:** Reflecting on the experience, thinking about what was learned, celebrating the team's journey and accomplishments: